

Book 4
Textbook in
Mathematics
for Class IV

MATH - MAGIC



0425



एन सी ई आर टी
NCERT

राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्
NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING

First Edition

March 2007

Chaitra 1928

Reprinted

January 2008

Magha 1929

February 2009

Phalgun 1930

January 2010

Magha 1931

November 2010

Kartika 1932

January 2012

Magha 1933

December 2012

Agrahayana 1934

December 2013

Agrahayana 1935

December 2014

Agrahayana 1936

November 2017

Agrahayana 1939

December 2018

Agrahayana 1940

PD 400T RPS

© **National Council of Educational
Research and Training, 2007**

₹ 60.00

*Printed on 80 GSM paper with NCERT
watermark*

Published at the Publication Division by
the Secretary, National Council of
Educational Research and Training,
Sri Aurobindo Marg, New Delhi 110 016
and Devtech Publishers and Printers (P.)
Ltd., 14/3, Bolton Compound, Mathura
Road, Faridabad (Haryana) 121 003

ISBN 81-7450-698-5**ALL RIGHTS RESERVED**

- ❑ No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the prior permission of the publisher.
- ❑ This book is sold subject to the condition that it shall not, by way of trade, be lent, re-sold, hired out or otherwise disposed of without the publisher's consent, in any form of binding or cover other than that in which it is published.
- ❑ The correct price of this publication is the price printed on this page. Any revised price indicated by a rubber stamp or by a sticker or by any other means is incorrect and should be unacceptable.

**OFFICES OF THE PUBLICATION
DIVISION, NCERT**

NCERT Campus
Sri Aurobindo Marg
New Delhi 110 016

Phone : 011-26562708

108, 100 Feet Road
Hosdakere Halli Extension
Banashankari III Stage
Bengaluru 560 085

Phone : 080-26725740

Navjivan Trust Building
P.O. Navjivan
Ahmedabad 380 014

Phone : 079-27541446

CWC Campus
Opp. Dhankal Bus Stop
Panihati
Kolkata 700 114

Phone : 033-25530454

CWC Complex
Maligaon
Guwahati 781 021

Phone : 0361-2674869

Publication Team

Head, Publication Division : *M. Siraj Anwar*

Chief Business Manager : *Gautam Ganguly*

Chief Editor : *Shveta Uppal*

Chief Production Officer : *Arun Chitkara*

Editor : *Bijnan Sutar*

Production Assistant : *Rajesh Pippal*

FOREWORD

The National Curriculum Framework (NCF), 2005, recommends that children's life at school must be linked to their life outside the school. This principle marks a departure from the legacy of bookish learning which continues to shape our system and causes a gap between the school, home and community. The syllabi and textbooks developed on the basis of NCF signify an attempt to implement this basic idea. They also attempt to discourage rote learning and the maintenance of sharp boundaries between different subject areas. We hope these measures will take us significantly further in the direction of a child-centred system of education outlined in the National Policy on Education (1986).

The success of this effort depends on the steps that school principals and teachers will take to encourage children to reflect on their own learning and to pursue imaginative activities and questions. We must recognise that given space, time and freedom, children generate new knowledge by engaging with the information passed on to them by adults. Treating the prescribed textbook as the sole basis of examination is one of the key reasons why other resources and sites of learning are ignored. Inculcating creativity and initiative is possible if we perceive and treat children as participants in learning, not as receivers of a fixed body of knowledge.

These aims imply considerable change in school routines and mode of functioning. Flexibility in the daily time-table is as necessary as rigour in implementing the annual calendar so that the required number of teaching days are actually devoted to teaching. The methods used for teaching and evaluation will also determine how effective this textbook proves for making children's life at school a happy experience, rather than a source of stress or boredom. Syllabus designers have tried to address the problem of curricular burden by restructuring and reorienting knowledge at different stages with greater consideration for child psychology and the time available for teaching. The textbook attempts to enhance this endeavour by giving higher priority and space to opportunities for contemplation and wondering, discussion in small groups, and activities requiring hands-on experience.

National Council of Educational Research and Training (NCERT) appreciates the hard work done by the Textbook Development Committee responsible for this book. We wish to thank the Chairperson of the Advisory Committee, Professor Anita Rampal and the Chief Advisor for this book, Professor Amitabha Mukherjee for guiding the work of this committee. Several teachers contributed to the development of this textbook; we are grateful to their principals for making this possible. We are indebted to the institutions and organisations which have generously permitted us to draw upon their resources, material and personnel. We are especially grateful to the members of the National Monitoring Committee, appointed by the Department of Secondary and Higher Education, Ministry of Human Resource Development under the Chairpersonship of Professor Mrinal Miri and Professor G.P. Deshpande, for their valuable time and contribution. As an organisation committed to the systemic reform and continuous improvement in the quality of its products, NCERT welcomes comments and suggestions which will enable us to undertake further revision and refinement.

New Delhi
20 November 2006

Director
National Council of Educational
Research and Training



TEXTBOOK DEVELOPMENT COMMITTEE

CHAIRPERSON, ADVISORY COMMITTEE FOR TEXTBOOKS AT THE PRIMARY LEVEL

Anita Rampal, *Professor*, Department of Education, Delhi University, Delhi

CHIEF ADVISOR

Amitabha Mukherjee, *Director*, Centre for Science Education and Communication (CSEC), Delhi University, Delhi

MEMBERS

Anita Rampal, *Professor*, Department of Education, Delhi University, Delhi

Asha Kala, *Primary Teacher*, MCD School, Krishi Vihar, G.K. Part I, New Delhi

Asmita Varma, *Primary Teacher*, Navyug School, Lodhi Road, New Delhi

Bhavna, *Lecturer*, DEE, Gargi College, New Delhi

Dharam Parkash, *Professor*, CIET, NCERT, New Delhi

Hema Batra, *Primary Teacher*, CRPF Public School, Rohini, Delhi

Jyoti Sethi, *Primary Teacher*, The Srijan School, Model Town, Delhi

Kanika Sharma, *Primary Teacher*, Kulachi Hansraj Model School, Ashok Vihar, Delhi

Prakasan V.K., *Lecturer*, DIET, Malappuram, Tirur, Kerala

Preeti Chadha Sadh, *Primary Teacher*, Basic School, CIE, Delhi University, Delhi

Suneeta Mishra, *Primary Teacher*, N.P. Primary School, Sarojini Nagar, New Delhi

MEMBER-COORDINATOR

Inder Kumar Bansal, *Professor*, DEE, NCERT, New Delhi

ILLUSTRATIONS AND DESIGN TEAM

Nancy Raj, Chennai

Anita Varma, Bangkok

S. Nivedita, Chennai

Srivi Kalyan, Harvard University

Sujasha Dasgupta, Gurgaon

Sougata Guha, The Srijan School, Model Town, Delhi

Arup Gupta, New Delhi

Cover Design: Sujasha Dasgupta

Layout and design support:

Anita Rampal, Sadiq Saeed and Sandeep Mishra



ACKNOWLEDGEMENTS

National Council of Educational Research and Training (NCERT) thanks the following persons and institutions for their contribution towards this textbook. Special thanks are due to the Centre for Science Education and Communication (CSEC), Delhi University, for providing academic support and hosting all the textbook development workshops. The teams were fully supported by the staff, who put in tremendous effort through long working hours even on holidays.

The Council gratefully acknowledges the contributions of Sandeep Mishra for the voluntary technical support and of Sadiq Saeed (*DTP Operator*), Pratul Kumar Vasistha (*Copy Editor*), Binod Kumar Jena (*Proof Reader*) and Shakamber Dutt (*Computer Station Incharge*) in shaping this book.

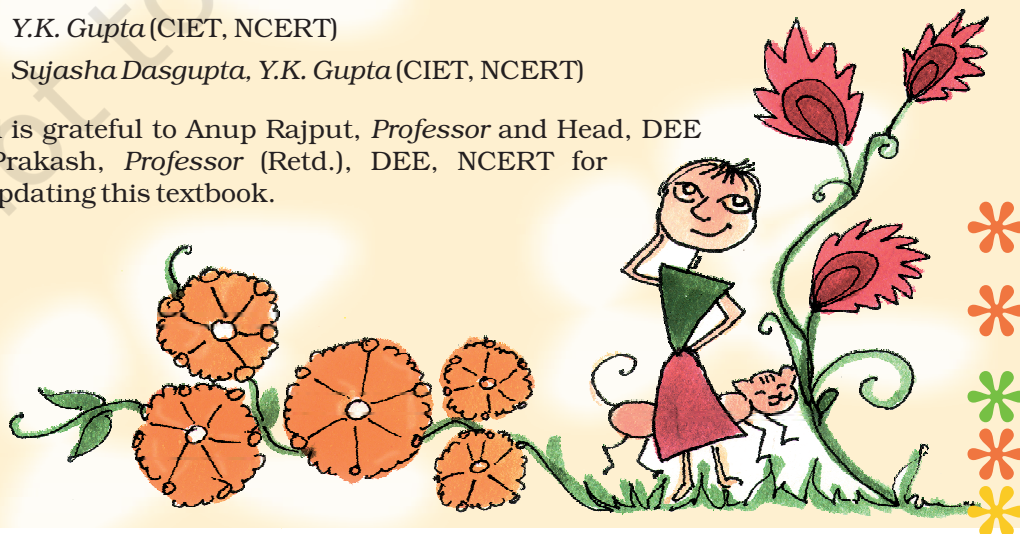
This book has drawn upon ideas from existing materials such as *Kunnimani* — Mathematics Textbooks for Class III & IV (developed by DPEP, Kerala for the Government of Kerala, 1997). The Council acknowledges the support of the *Chakmak* team at Eklavya, Bhopal for the children's drawings.

The Council also acknowledges the following teachers — P.K. Abdul Lathif and Cheggareddy F. C., Indira Ramesh, Sandhya Kumar — for participating in discussions and some book development workshops. The support offered by K.K. Vashishtha, *Head*, Department of Elementary Education, NCERT is also gratefully acknowledged.

The Council gratefully acknowledges the photographs taken by the following:

- Chapter 1 — Anita Rampal, Gulab, Kabir Vajpeyi, Jugnu Ramaswamy, Y.K. Gupta, Seema K.K. The contribution of Vinyas Centre for Architectural Research & Design, New Delhi and Jagriti Public School, Murshidabad, W.B. is also acknowledged.
- Chapter 2 — Y.K. Gupta (CIET, NCERT)
- Chapter 3 — Mahesh Basedia, Sanchari Biswas, A.B. Saxena. Thanks are also due to Eklavya, Bhopal.
- Chapter 4 — Swati Gupta
- Chapter 5 — Suneeta Mishra, Y.K. Gupta (CIET, NCERT)
- Chapter 6 — Nitin Upadhye. The Council also thanks the multimedia project 'Girl Stars', created by *Going to School* and supported by UNICEF, for the material on Kiran the 'Girl Star'.
- Chapter 7 — Y.K. Gupta (CIET, NCERT)
- Chapter 12 — Sujasha Dasgupta, Y.K. Gupta (CIET, NCERT)

The Council is grateful to Anup Rajput, *Professor* and *Head*, DEE and Dharam Prakash, *Professor (Retd.)*, DEE, NCERT for reviewing and updating this textbook.





MATH-MAGIC

What is inside this book?

Foreword	iii
1. Building with Bricks	1
2. Long and Short	13
3. A Trip to Bhopal	23
4. Tick-Tick-Tick	35
5. The Way The World Looks	52
6. The Junk Seller	60
7. Jugs and Mugs	69
8. Carts and Wheels	81
9. Halves and Quarters	94
10. Play with Patterns	107
11. Tables and Shares	120
12. How Heavy? How Light?	133
13. Fields and Fences	149
14. Smart Charts	162